

Nutrient Status and Trends

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Biographical Sketches of Authors

Mary Skopec is the Section Supervisor of the Water Monitoring Program at the Iowa Department of Natural Resources. Mary earned her B.S. and M.A. degrees in geography from the University of Iowa, and in 1999 she completed her Ph.D. in environmental science. Mary has worked at the Iowa DNR since 1991, during that time she has been involved in water quality projects investigating the impacts of intensive agricultural practices on streams. As supervisor of the water monitoring section, Mary directs the state's water monitoring program including the collection, analysis, and management of information on stream, lake, wetland, and groundwater resources.

Eric O'Brien completed his master's research in Environmental Science at the University of Northern Iowa in the May 2003. His primary interest of focus is environmental microbiology, specifically focusing on bacterial source tracking. Before joining the IDNR Water Monitoring Section, Eric also helped coordinate undergraduate water research activities at the University of Northern Iowa. These interests led him to work for the Water Monitoring Section in June 2003. Eric's effort has been primarily focused on bacterial monitoring as well as tracking of bacterial sources for the state's beaches.

Abstract

In anticipation of the development of numeric nutrient standards, the Iowa General Assembly directed the Iowa DNR to conduct a nutrient study during 2003 (Senate File 2293): *'The department shall conduct a study that considers the effects on waters of this state from phosphorus originating from municipal and industrial sources and from farm and lawn and garden use. The department shall report the results of its study to the general assembly by January 1, 2004.'* The legislation also requires the DNR to develop a nutrient budget by watersheds, establish a phosphorus index rule, assess nutrient control technologies, and establish a numeric water quality standard for phosphorus. Together, these activities will be used to develop a comprehensive strategy for the state over the next few years.

The development of the state's nutrient strategy is occurring through a series of coordinated steps. This presentation focuses on one of the first steps – synthesizing data on the status of Iowa's waters. The methodology used to determine impacts of nutrients on Iowa's water consisted of several activities: 1) Comparison of in-stream and lake nutrient concentrations to established EPA benchmark levels; 2) Comparison of in-stream and lake nutrient concentrations to Iowa indicators of biological health; 3) Determination of relationships between land use and measured nutrient concentrations; and 4) Comparison of inputs as established by a nutrient budget to stream and lake concentrations.

The current status of Iowa's waters based on data from 2000 through 2002 indicates that the majority of Iowa's water bodies exceed the benchmark levels established by EPA. Iowa data show that on average, 70% of Iowa stream and lake samples do not meet benchmark levels for phosphorus and 80% of the time for nitrogen. The percentage of samples exceeding the benchmarks varies annually and seasonally since rainfall is an important driving factor for the transport of nutrients.